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(iii) Write the product formed when primary, secondary and tertiary aliphatic amine react with nitrous acid.

(iv) How is ethylamine prepared by Gabriel phthalimide synthesis. (4,4,4,3)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5861

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Unique Paper Code : 2172512401

Name of the Paper : DSC- Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles

Name of the Course : B.Sc. (Prog.)

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll. No. on the top immediately on receipt of this question paper.
2. Attempt any four questions, all questions carry equal marks:

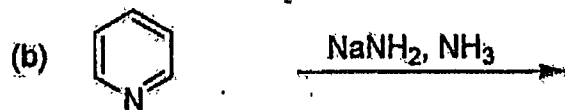
1. (i) Identify the name of the reaction and write the product:

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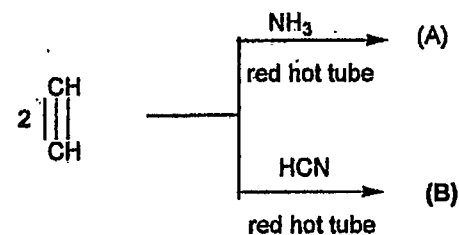
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- (ii) How will you distinguish between primary, secondary and tertiary amines by Hinsberg test. Explain with reactions.
- (iii) Give a comparison between Hofmann elimination and Saytzeff elimination, with suitable example.
- (iv) Write the structure of A, B and C.

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- (b) What is sulfanilic acid. Give its method of preparation.
- (iv) What is carbylamine reaction. Write the chemical reaction and give its use. (4,4,4,3)
6. (i) What is Hoffmann degradation reaction. Give its mechanism.
- (ii) What is the order of basicity of CH_3NH_2 , $(\text{CH}_3)_2\text{NH}$, $(\text{CH}_3)_3\text{N}$ in aqueous medium. Explain on the basis of inductive and solvation effects.

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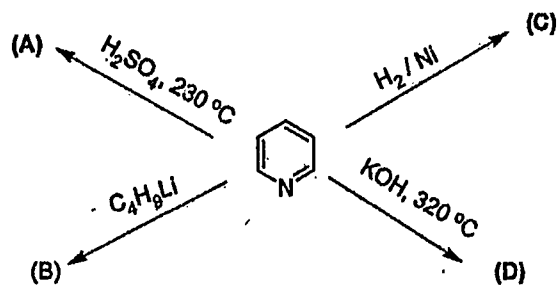
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(iv) Pyrrole undergoes coupling reaction with benzene diazonium salt whereas pyridine does not. Explain.

(4,4,4,3)

5. (i) Furan undergoes Diels Alder reaction. Explain why with suitable example.

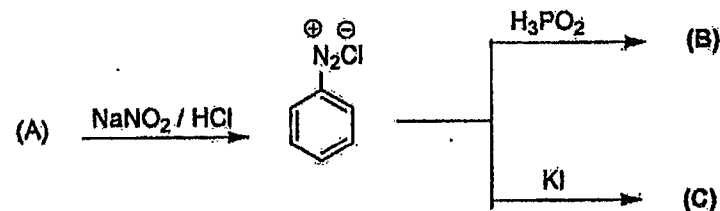
(ii) Write the structure of products A, B, C and D in the following reactions of pyridine:



(iii) (a) Write the product A and B obtained when two moles of acetylene treated with either ammonia or HCN.

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(4,4,4,3)

2. (i) Give reason for the following:

(a) Trichloroacetic acid is stronger acid than acetic acid.

(b) Alkaline hydrolysis of esters is preferred over acidic hydrolysis for preparation of carboxylic acids.

(ii) Differentiate between the keto and enol form of ethylacetoacetate. How are they isolated.

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(iii) What is Claisen condensation. Give its mechanism.

(iv) Pyrrole undergoes electrophilic substitution reactions at C-2. Explain why. (4,4,4,3)

3. (i) What is Perkin condensation. Write its mechanism.

(ii) Arrange the following in increasing order of reactivity towards nucleophilic reaction give reason for the same.



(iii) Convert

(a) Acetyl chloride to t-butyl alcohol

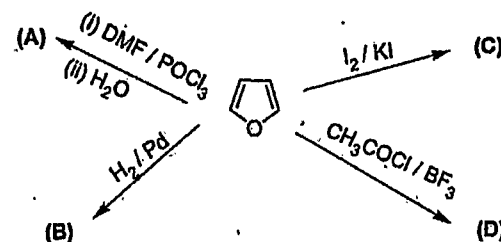
(b) Ethylacetoacetate to 2-methylbutanoic acid

(iv) Write the synthesis of 3-chloropyridine from pyrrole using dichlorocarbene. (4,4,4,3)

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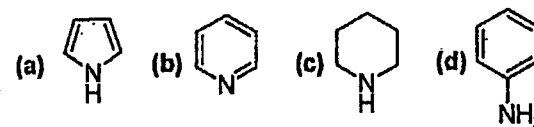
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4. (i) Write the structure of A, B, C and D in the following reactions of furan:



(ii) What is the order of aromaticity of furan, thiophene and pyrrole. Give reason for this.

(iii) Arrange in increasing order of basicity. Give reason for it.



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